RESEARCH PRODUCTIVITY OF WEB TECHNOLOGIES IN LIBRARY AND INFORMATION SCIENCE LITERATURE (2001-2020): A SCIENTOMETRIC ANALYSIS.

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Research Productivity of Web Technologies in Library and Information Science Literature (2001-2020) : A Scientometric Analysis.

1. Introduction:

Scientometric is part of library and information science. Scientometric is field of study concern with measuring and analyzing scientific literature, it contains two words one is science and another one is metrics but it doesn't mean that it measure of the science, rather than it measurement of scientific published literature. It is the field that deals with analysis of published scientific literature. It has subfield called bibliometrics. Bibliometrics is nothing but use of statistical tools to analyze books, articles and other research publications (Conference proceedings, research articles). These scientometric and bibliometrics are frequently used in the field of library and information science. It is the tool for measurement of impact of Research papers, Academic Journals and Individual researchers). There are two levels of metrics i.e Journal Metrics and Author metrics. Journal level metrics includes Impact factor, Cite score, SNIP , SJR and h index. Author metrics includes h-index, i10 index, g index and characteristic index.

1.1.Definition and Meaning:

The word bibliometrics is a combination of two words that is Biblio and Metrics. Biblio is derived from Latin/Greek word "Biblion" means "Books". On the other hand metrics is derived either from Latin/Greek words means "Medicus" (in Latin) or "Metrikos" (in Greek). The meaning of this word metrics is measurement. In other words metric is the "science of meter, (measurement)". The purpose of strategic statistical bibliography is to shed light on the process of written communications and of the nature and course of development of a displayed through (written communication) by means of counting and analysing the various facets of written communication.

According to **Beck (1978)** scientometrics is defined as the quantitative evaluation and inter comparison of scientific activity, productivity and progress. Nilimov (1969) of USSR define scientometrics as the quantitative methods which deals with the analysis of science viewed as an

information process. Brooks (1990) gave a further insight into the use and definition and stated that "the terms scientometric, nurtured by Tibor braun, has a become fruitful in Science policy studies…the term has established a significant role in the social Science. Applications are so far been restricted to explanation of applications are so far been restricted to explanation of citation data provided by ISI but further refinements are now being critically examined". Bookstein (1995) define scientometrics as "the science of measuring Science". Scientometric is also considered a bibliometric measurement of evaluation of scientific development, social relevance and impact of application of science and technology, etc. Further, Tague-Sutcliffe (1992) define scientrometric as a "study of quantitative aspects of Science as a discipline or economic activity. It is a part of the sociology of science and has application to science policy making. It involves quantitative studies of scientific activities including, among others publication, and so overlaps below Metrics to same extent".

2. Different Metrics

2.1.Scientometric:

The twentieth century may be described as the century of the development of metric science. Among the different metrics scientometrics is the most interesting subject area in the field of library and information science. Which can be applied to any discipline irrespective of their period of evaluation. It involves quantitative studies of scientific activities. It is also one such useful Matrics technique which helps to solve the problems challenges posed by so-called information explosion over the ear several new terms have appeared in library and information science. They were known as librametrics, bibliometrics, scientometrics, informatics, cybermetrics and webometrics. Now let us see the brief what all these metrics define.

Origin: The word scientometric first coined in eastern Europe in 1960's. Scientometric means measurement of information process. And informetrics is used to " documentation/information handling activities". There is no much difference between bibliometrics and scientometric, the term bibliometrics used in western Europe and scientometric used in Eastern Europe. The word scientometric is a Russian term, it means application of scientific quantitative measurement. It was suggested by Dorlov and Kormoni. Later Derek John de Solla Price (22 January 1922 – 3 September 1983) was credited as "Father of Scientometric".

Definitions:

Nalimov and **Mulchenko** defined scientometric as "the application of quantitative methods which are dealing with the analysis of science viewed as an information process".

According to **Pouris (1989)**, " Scientometric is the application of quantitative techniques(system analysis, mathematical and statistical techniques etc.) To scientific communication (science output, science policy, science administration etc.) With the objectives of;

- Developing science indicators
- Measuring the impact of science on society and
- Comparing the output as well as the impact of science at national and international levels.

2.2.<u>Libramatrics</u>: as a "quantitative analysis of various facets of the library activities and Library documents by the application of mathematical and statistical calculus two see solution to library problems".

Origin: In 1948 at the Aslib's conference in Lamington Spa, Ranganathan introduced the term Librametry for the first time. He suggested to develop Librametry on the lines of biometry, econometry, and psychometry . His suggestions were avidly welcomed at the conference by Bernal and others. The term Librametrics has two roots: Libra and Metry. The word 'Libra' connotes 'library' and 'metrics' means measurement. Further, as the librarian of the Madras University Library, he practiced various librametric techniques way back in 1925, in order to solve day today library problems and to streamline the day-to-day library activities, services for their clientele and also for the betterment of library professional as a whole

2.3.<u>Bibliometrics</u>: as the "study of the use of documents and patterns of publication in which mathematical and statistical methods have been applied.

Origin: The term Bibliometrics was first coined by Prichard in 1969 in preference to existing terminology 'statistical bibliography'. The word "Bibliometrics" has two roots: 'biblio' and 'metrics**.** The term 'biblio' is derived from the combination of Latin and Greek word'biblion' equivalent to Bylos, meaning book, paper which in turn was derived

from the word Bylos, a city of Phenonicia, a noted city for export trade in paper. The word ‘metrics’, on the other hand, indicates the science of meter, i.e., measurement and is derived either from Latin or Greek word ‘metricus’ or ‘metricos’ respectively, each managing measurement. This term was coined for the first time by Alan Pritchard. He used the term to describe all 'studies which seek to quantify the process of written communication'. Fairthorne also defined it as 'the quantitative treatment of the properties of recorded discourse and behaviour pertaining to it.'

2.4.Informatics: was used as a generic term to mean the use and development of variety of measures to study and analysis several properties of information in general and documents in particular. It covers the bibliometrics and scientometric.

Origin: Information is the study of quantitative aspects of information (Wolfram, 2003). This includes the production, dissemination and use of all forms of information, regardless of its form or origin. The word ‘Informetrics’ (Brookes, 1990) was first proposed by Otto Nacke of West Germany in1979. As such, informetrics encompasses the fields which studies quantitative aspects of science. It is mostly concerned with development of models to explain and identify the various characteristics of the literature. It also discusses scientific productivity, collaborative research, etc.

2.5.Webometrics: as a study of the quantitative aspects of the construction and use of information resources structure and technologies on the www drawing on bibliometrics and informatics approaches.

Origin: The term webometrics was first coined by Almind and Inngwersen in 1997. The science of webometrics tries to measure the World Wide Web to get knowledge about the numbers and types of hyperlinks, structure of the World Wide Web and usage patterns. According to Bjorneborn and Ingwersen (2004), webometrics is “the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the Web, drawing on bibliometric and informetric approaches. It is also defined as “the study of web-based content with primarily quantitative methods for social science research goals using techniques that are not specific to one field of study”

(Thelwall, 2009), which emphasizes the development of applied methods for use in the wider social sciences.

2.6.<u>Cybermatrix:</u> Cybermetrics is one of the recently emerged fields in the line of metrics studies. It has gained much popularity since the mid-1990s with the advent of information technology. It is mainly concerned with the computer-science-based approaches. Cybermetrics is used as a generic term "The study of the quantitative aspects of the construction and use of information resources, structures and technologies on the whole Internet drawing on bibliometric and informetric approaches". Cybermetrics thus encompasses statistical studies of discussion groups, mailing lists, and other computer-mediated communications on the internet, including www. Besides covering all computer-mediated communications by using internet applications, Cybermetrics also covers quantitative measure of the internet backbone technology, topology and traffic. The scope of Cybermetrics which includes 5 electronic resources as well. Research of all network-based communication by using Informetric or other quantitative measures is called Webometrics. The field of cybermetrics exceeds the boundaries of bibliometrics. Cybermetric studies still fit in the generic field of Informetrics as the study of the quantitative aspects of information "in any form" and "In any social group" as stated by Tague-Sutcliffe (1992). Webometric expands to include the field of bibliometrics, as webometrics inevitably will contribute to further methodological developments of web-specific approaches. As ideas rooted in bibliometrics, scientometrics and informetrics contributed to the emergence of webometrics, ideas in webometrics might also contribute to the developments of these all embracing fields.

2.7.Altmetrics: Altmetrics was founded in 2011 by Euan Adie the founder of data Science Company Altmetrics.com. It is an "alternative-metrics" tool for existed traditional metrics tools. This new method has evolved as a scholarly communication related to online resources. (Romer and Borchardt, 2012). Scholars were moving their work onto the web, and alternative, article-level metrics drawn from online reference magazines Zotero and Mendeley, scholarly social bookmarking services such as citeulike, or even

page-views of blogs and "likes" or comments on mainstream social media sites such as Facebook and Twitter could be used to track the impact on new research in real time, wrote Impactstory cofounder Jason Priem; Wikimedia Foundation head of research Dario Taraborelli; Paul Growth, then researches VU University Amsterdam; and Cameron Neylon, the then-senior scientist at the Science And Technology Facilities Council. Could these new metrics be just as relevant as peer review and citations when judging the impact and influence of new research?

3. Scientometric:

The term scientometric originated as a Russian term for the application of quantitative methods to the history of science. This term was introduction and came into from prominence with founding of the journal named "scientometric'. It deals with the analysis evaluation and graphic representation of Science and technology information it tells who is doing what and where?

By T Braunin (1977) originally published in Hungary and currently from amsterdam. Scientometric is used to mean communication process in Science including social culture aspects and appears to be almost synonymous of science of science. Scientometric can be treated as an analogue concept to bibliometrics. The terms scientrometric is a field which applied quantitative methods to the study of Science as an information process does cm it is a part of sociology of science and has application to science policy making.

3.1. Scientometric Indicators

Impact factor: Impact factor was first described by Dr Eugene Garfield in 1955. It is a measure of importance of scientific journals which is widely used to rank and evaluate journals this is used as scientometric indicators for evaluating journals impact factor. It is a quality qualitative indicator which provides a measurement of the prestige and international visibility of journals it is a number of current citations of articles published in the specific journals in the two-year period divided by the total number of articles published in the same journal in the corresponding two years period.

H index - H index has introduced by Hirsch for quantify an individual scientific research output it aims to measure both the scientific productivity and the appearance of scientific impact of the scientist this index is based on the set of the scientist most cited papers and the number of citations that they have received in other people's publications.

3.2. Scientometric Tools:

The quantitative as well as qualitative analysis of any scientometric studies such as a citation mapping visualization, bibliography coupling, co-authorship network, co-words mapping etc. Are carried out by using scientrometric tools. This tools are very much useful for scientrometricians st for mapping their parameters in any aspect of their study.

Athour map: it is used for citation mapping and visualisation

Bib couple: it is used for visualisation of the bibliographic coupling among authors.

Citespace: it is used for visualising patterns and trends in scientific literature.

Full text: it is a software for a co-word mapping of full text.

Hit cite: bibliographic analysis and visualisation software.

4. Bibliometrics Laws:

One of the main areas in bibliometric research concerns the application of bibliometric laws. The three most commonly used laws in bibliometrics are - Lotka's Law of Scientific Productivity, Bradford's Law of Scatter, and Zipf's Law of Word Occurrence;

4.1.Lotka's Law of Scientific Productivity:

In 1926, Alfred J. Lotka proposed an inverse square law relating to scientific papers to the number of contributions made by each author. Lotka's Law describes the frequency of publication by authors in a given field. It states that ". . . The number (of authors) making n contributions is about $1/n^2$ of those making one; and the proportion of all contributors, that make a single contribution, is about 60 percent". This means that out of all the authors in a given field,

60 percent will have just one publication, and 15 percent will have two publications ($1/2^2$ times . 60), 7 percent of authors will have three publications ($1/3^2$ times . 60), and so on. According to Lotka's Law of scientific productivity, only six percent of the authors in a field will produce more than 10 articles.

Lotka's equation is $x^n.y$= Constant.

Where

Y= Frequency of authors making n contribution, the value of the constant was found to be 0.6079

4.2.Bradford's Law of Scatter:

Samuel Clement Bradford in 1934 points out that if scientific journals are arranged in order of decreasing productivity of articles on a given subject, they may be divided into a nucleus of periodicals more particularly devoted to the subject and several groups and zones containing the same number of articles as the nucleus when the number of periodicals in the nucleus and succeeding zones will be 1: n: n^2.

Bradford's Law states that journals in a single field can be divided into three parts, each containing the same number of articles:

- A core of journals on the subject, relatively few in number, that produces approximately one-third of all the articles;
- A second zone, containing the same number of articles as the first, but a greater number of journals, and
- A third zone, containing the same number of articles as the second, but a still greater number of journals.

The mathematical relationship of the number of journals in the core to the first zone is a constant n and to the second zone the relationship is n^2. Bradford expressed this relationship as 1 : n : n^2. Bradford formulated his law after studying a bibliography of geophysics, covering 326 journals in the field. He discovered that 9 journals contained 429 articles, 59 contained 499 articles, and 258 contained 404 articles. So it took 9 journals to contribute one-third of the

articles, 5 times of 9, or 45, to produce the next third, and 5 times 5 times 9, or 225, to produce the last third.

Bradford's Law serves as a general guideline to librarians in determining the number of core journals in any given field. Bradford's Law is not statistically accurate, but it is still commonly used as a general rule of thumb.

4.3.Zipf's Law of Word Occurrence:

George K. Zipf, 1947 states that if the words occurring in a natural language text of sizable length were listed in the order of decreasing frequency then the rank of any given word in the list would be inversely proportional to the frequency of occurrence of the word. Zipf's equation is

R . F = k

Where

R = Rank;

F = Frequency of Word;

K = Constant

The Law states that in a relatively lengthy text, if you "list the words occurring within that text in order of decreasing frequency, the rank of a word on that list multiplied by its frequency will equal a constant. The equation for this relationship is: r x f = k where r is the rank of the word, f is the frequency, and k is the constant. Zipf illustrated his law with an analysis of James Joyce's Ulysses. "He showed that the tenth most frequent word occurred 2,653 times, the hundredth most frequent word occurred 265 times, the two hundredth word occurred 133 times, and so on. Zipf found, then that the rank of the word multiplied by the frequency of the word equals a constant that is approximately 26,500".

5. Web technology

Web Technology refers to the various tools and techniques that are utilized in the process of communication between different types of devices over the internet. A web browser is used to access web pages. Web browsers can be defined as programs that display text, data, pictures, animation, and video on the internet. Hyperlinked resources on the World Wide Web can be accessed using software interfaces provided by Web browsers.

5.1.Web Technology can be classified into the following sections:

World Wide Web (WWW): The World Wide Web is based on several different technologies : Web browsers, Hypertext Markup Language (HTML) and Hypertext Transfer Protocol (HTTP).

Web Browser: The web browser is an application software to explore www (World Wide Web). It provides an interface between the server and the client and requests to the server for web documents and services.

Web Server: Web server is a program which processes the network requests of the users and serves them with files that create web pages. This exchange takes place using Hypertext Transfer Protocol (HTTP).

Web Pages: A webpage is a digital document that is linked to the World Wide Web and viewable by anyone connected to the internet has a web browser.

Web Development: Web development refers to the building, creating, and maintaining of websites. It includes aspects such as web design, web publishing, web programming, and database management. It is the creation of an application that works over the internet i.e. Websites.

5.2.Web Applications

Web 0.0 (Developing the internet) : WWW stand for " The World Wide Web" which is a subset of the internet. It links and connects documents together that can be searched on web browsers such as Google Chrome, Internet Explorer, Safari and others. It was first developed between 1989-1990 by the scientist with the name Tem Berners Lee.

Web 1.0 (Read on only web): according to Tem Berners Lee the first implementation of the web, representing the web 1.0 could be consider as the **read only web**. Web 1.0 was the first stage or generation of the WWW and it was primarily read only and static which means that users could not add or interact with the website. It was known as the information web and was present between the early 1990-2000.

Web 2.0 (Read and write web); 2.0 was the second stage of the generation of the world wide web (2nd Generation of the Internet) and to not only read websites but also interact and connect with other users. The term was invented by Darcy dinucci in1999 and later popularized by Tim O'Reilly Media Web 2.0 conference in late 2004. All social media such as blogs, facebook, youtube, and many more emerged with to Web 2.0 and companies released the strength of community interaction with business website

Web 3.0(The semantic web): Web 3.0 was first mentioned by J Markoff n the New york times in 2006 as generation of web that defines organized or structured data to simplifies automation, integration and discovery access multiple applications. This means that web 3.0 is not only a read and write web but also a web that focuses on the individual user and machine .

Library 2.0.Is transformation in the way library services are delivered to library users. It proved new tools to make the library space (Both virtual and Physical) more interactive, Collaborative and Driven by community needs it encourages collaborative two way social interactions between library staff and library customers. L to requires user participation and feedback in the development and maintenance of library services.

Cloud computing. Cloud computing is a general term for anything that involves delivering hosted services over the internet. These services are divided into three main categories or types of cloud computing: infrastructure as a service (iaas), platform as a service (paas) and software as a service (saas).

A cloud can be private or public. A public cloud sells services to anyone on the internet. A private cloud is a proprietary network or a data center that supplies hosted services to a limited number of people, with certain access and permissions settings. Private or public, the goal of cloud computing is to provide easy, scalable access to computing resources and IT services.

Internet of Things (iot). The Internet of Things (iot) describes the network of physical objects—"things"—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools. With more than 7 billion connected iot devices today, experts are expecting this number to grow to 10 billion by 2020 and 22 billion by 2025. Oracle has a network of device partners.

6. Review of Literature

In every research work review of literature is cardinal process, because to know the earlier research works those are related to subject area. This review of literature find out research progress in earlier time and gaps in the research work. it connects the research facts to take initiative further research work on correlated area.

The following are the some review of literature related to scientometric oriented researches on web technologies and there branches.

Dr. Arunkumar V R (2021), Conduct a study on "Scholarly communication on web 3.0". In this paper author elaborate investigating patterns and steps for academic communication. Bibliometrics gives methodology and measures. In other hand way web 3.0 defines artificial intelligence and technologies. This paper presents study on web 3.0 technologies in the flat form of web of science for the period 2007-2020. Here author make country wise distribution of literature, USA stud first place in country wise distribution, USA has published 22.33%. Total 2145 citations received by web 3.0 technology literature. Almost all research literatures published in English language and study find out the top 10 publication on the bases of citations.

K Praveena, R Veerakumar and Dr. S Rajeshwari (2021), took up a study on "Mapping of artificial intelligence research output: A scientometric study". The study describes research progress with respect of artificial intelligence during 1999 to 2019. Web of Science data base is used for data collection. Author finds total 21,643 articles publish in past 2 decades from 20008 to 2019 observed very immense growth in publishing. The collection export to Hichat result of it

20743 articles and 341247 times cited reference has find throughout local and global. Degree of collaboration 0.83.

Dr. C Bhaskar(2021) conducted a study on "Exponential Trend and mapping of research in web 2.0". This study describes articles publication on web 2.0 in year 2000 to 2019. In this period total 7,123 publications recorded. Out of which 2016 was most productive year (825) (12.08%), second highest publication found in 2017 with 793 (11.61 %) and respectively 2017 and 2018 publication result is 745 (10.91%) and 730 (10.69%). Analysis made on the basis of website web of science majority of publication held in journals publications 5743 (84.12%) & 134 (1.96%) contributed California University. Zhang Y was the top author during the period he contributes 16 (0.23%) of publications. USA is a highest domestic and international collaborative papers 840 and 9 not 5 respectively out of 1745 publication and collaborative index. Domestic 1.43% & International 1.38 %.

Sandeep Kumar Sood and Keshav Singh Rawat(2021), explores the research "Analysis of ICT assisted disaster management". Author explains the natural and manmade disaster in the past few years. This study suggested administration and governments has to take steps in field of ICT environment preventing disasters like ICT, Cloud computing etc. And higher education institutions take part in disaster management. This study finds scientometric analysis of ICT assisted disaster management in research of 15 years of study publication growth, citation analysis, collaboration and keyword co-occurrence analysis for technological trends. Overall this study presents patterns in research trends and collaborations to future development of research in the field.

Dr. Balachandra S Deshpande and Dr Sanjana C (2020). Have discussed and evaluate "Internet of things by scientomertic study". To switch our personal computers system into Internet for connecting so many of computers placed across the world and this concept named as Internet of Things adoption of internet of things helps in exchanging worthy information and make life easier. To evaluate internet of things applications in libraries conduct a scientometric study for a quantitative aspect by using web of science database, to found literature connected to internet of things in libraries in the period of 2006 to 2020 study found total 267 publications from 2006 to 2020 internet of things was increased steadily. It shows internet towards involving of internet of things. Other findings are related to citation analysis, collaboration pattern. This

paper concludes growth of research in internet of things and impact of in daily life. Author opinion there is a very less research had on scientometric in the field of internet of things in libraries.

Ashok Kumar Jay, Shiv Kumar and Puttaraj A Choukimath (2015), have explored and "Analysis of software's used in scientometric research for scientific community". To represent impact of research output using science mapping and resolve social network analysis has been developed over the time present paper indicates wide use of softwares for scientoetric analyzers ,mapping and visualization.

Publication trends in Face book romantic study analyzed by **Ecem Basak & Fethicalisir (2015**), in this paper Face book is a main keyword used to search the data from web of science, concentrating on title and topic of articles. Author has found 4714 articles during 2005 to 2013 in this way United States is a most productive country and English is a common language in the publication.

Ashturkar Vinit Bhanudas Rao and Prof. Dr Vaishali Khaparde (2018) evaluate "Scientometric profile of web 2.0 in emerald database". Considering total 215 articles published between 2011 to 2015 in emerald database. Researcher was analysis data by year wise distribution, authorship pattern distribution, institution wise, country wise, email domain wise, institutional domain wise. The result of the study said 2011 year is produced more. In this year published 70 research papers out of which Victoria University contributed 3 articles, 3 articles from New Zealand and 3articles from University of Birmingham, UK.

K S Sivakumaren, S Swaminathan and G Kartikagen (2019). Observed "Growth and development of publications of cloud computing by scientometric study during 2001 to 2010". The study aims to find out growth and development of cloud computing literature. Through implementing cloud computing technology is helps to provide better services in the field of library and information science. For collection of related data retrieved from web of science database. Objective of study is to find number of papers published during selected period of time, total 510 records found which are related to cloud computing. The author named Buyya R is most contributed researcher and USA published maximum number of research articles in the field of cloud computing. Further researcher express opinion for increase the quality and quantity

of literature in the same field, scientists, scholars and lectures have to contribute their study in cloud computing subject.

Muneer Ahmad, Dr M Sadik Batcha, Basharat Ahmadawani, Mohammad Idrees Khan and S Roselin Jahina (2018), Under taken research on topic of "webology journal" author studied research output of "webology journal" for the period 2013 to 2017. By scientometric analysis. Webology is one of the international peer-reviewed journals which contains the www based research is in English language. Journal aims to disseminate innovative information regarding webmatrics. And communicates through journal in this paper research is concentrated on authorship pattern, author productivity and coverage of subject area during 2013 to 2017. Researchers found total 62 articles in selected year most of the papers are in collaborative in nature. Webology journal contains maximum of web 2.0/ lib 2.0, social networking and scientometrics, bibliometric study. Iranian authors contributed 37.10%. This is a highest number of research papers the best output of the study used standard formulas and statistical tools.

7. Statement of Problem

The statement of the research problem is "**Research Productivity of Web Technologies in Library and Information Science Literature (2001-2020): A Scientometric Analysis."**

8. Need for the study

The scientometric study has going to find the performance of publication in the field of Web Technologies. This study may give valuable method for the identification of new scientific technological knowledge. This study also helps to know the quantitative aspects of publications of research works, articles in journals and conference proceedings.

This present study "Research Productivity of Web Technologies in Library and Information Science Literature (2001-2020): A Scientometric Analysis." Is an attempt to examine the main features in the field of Web Technologies in Library and Information Science Literature. The present study is to understand the information and communication channels, in one of the multidisciplinary subject of Web technologies in Library and Information Science Literature published in form of Journal Articles, Chapters in Book, and Conference Proceedings for a span of 20 years that is from 2001-2020.

9. Scope and Limitations of the Study:

Scopes:

The study shall find out quantum number of research publication, authorship pattern, research productivity of journals, top ranking journals and authors, growth models, year wise publication and half life period and obsolescence held in the area of web technologies in library and information science literature. The study is purely based on articles published on journals, editorial books of workshops, conference proceedings in the web of science and SCOPUS data base during 2000-2020. The study is restricted to 20 years. For data collection used Web of Science and SCOPUS data bases.

Limitations

1. This study is restricted to Scientometric Analysis only
2. This study is restricted to Web Technologies in Library and Information Science Literature
3. This study covers span of 20 years only that is 2001 to 2020

10. Objectives of the study

1. To identify the quantum of research work on Web technologies in Library and Information Science in the period of 2001-2020
2. To trace out the authorship pattern in the field of "Web Technologies in Library and information science Literature."
3. To identify the Research Productivity of Journal articles in the field of "Web Technologies in Library and information science Literature."
4. To find out the top ranking authors and their citations
5. To find more productive journal in the field of "Web Technologies in Library and information science Literature"
6. To present systematic view of literature of "Web Technologies in Library and information science Literature"

7. To examine various growth models in field of "Web Technologies in Library and information science Literature"
8. To find collaborative research in "Web Technologies in Library and information science Literature"
9. To evaluate the half life period and Obsolescence of the study in "Web Technologies in Library and information science Literature"
10. To know the year wise publication of articles in the field of "Web Technologies in Library and information science Literature"
11. To find out authorship pattern in the field of "Web Technologies in Library and information science Literature"

11. Formulation of Hypothesis

1. Web technology literature follows Lotka's Law of Literature
2. Web technology literature applicable to Bradford's law of Scattering
3. Web technology literature follows exponential growth
4. Collaborative research in the field of web technology of library science is high
5. Multiple number of authors dominating in the field of web technology literature

12. Methodology

This research will based on the analysis of research papers published in the field of web technologies in library and information science literature. Which will analyzed by using various Scientometric techniques. For the collection of related data on web technologies literature for the period 2000 to 2020 will collected from Web of Science and SCOPUS data bases.

This study shall be taken into two steps:

1. Data collection
2. Data analysis and interpretation
3. Stringers

1. Data Collection:

Collection of journals in Library and Information Science shall be retrieved in th web of science and SCOPUS database on web technologies for the period of 2000 - 2020 will considered as main source of data for this study. The data has been compiled from online journal articles from the Web of science and SCOPUS Database. For each Cited reference, the following data were noted: a) Number of author(s), b) Type of Documents, c) Country of origin of the Document/Journal d) Bradford's Law e) Form of Publication f) Journal Self –Citation g) Authorship Pattern h) Lotka's Law and other data required for analysis,. In future Details of publications will entered in the MS excel. Finally the data shall arranged as per the objective of the study. The data so, collected will be analyzed and tested with the help of various statistical techniques and Bibliometric laws are used to prove disprove the formulated hypotheses of the study.

1.2.Data Analysis and Interpretation:

Collection of data will analyzed, by statistical techniques and presented said data in tabular as well as in graphical form. In tabular form, Bar chart, Pie chart, Line graph will used for presentation. For the purpose of analysing the data collected, some statistical techniques shall be used. In addition, some of the tools, techniques will used for analysing includes bibliometrics tools and Statistical tools like Bradford's law of scattering, Lotka's law frequency distribution, Zipfs law of word occurrence, growth models, Chi'squar test, ANOVA test, T-test Z-test, Correlation and regression and Non parametric test are to be used. Finally gave data set was organized, tabulated and analysed with the help of Ms-Excel, SPSS and other statistical tools and softwares.

1.3.Stringers

This study will used keywords like Web technologies, Web 1.0, Web 2.0, web 3.0, web 4.0, lib 2.0, cloud computing, internet of things. Disaster management, Digitalization, Internet, ICT, Computer technology and Artificial intelligence.

13. Chapterization

An outline of the research will be presented in chapter system. The following are the chapters describes contain of the study.

Chapter 1- Introduction

In this chapter introducing the topic, statement of the problem, objectives, need for the study, scope and limitations, methodology and Hypothesis.

Chapter 2- Review of Literature

This chapter will covers the review of related literature on scientrometric analysis in the area of web technologies during 2000 to 2020. It involves prior research outcomes of web technologies.

Chapter 3- Scientometric Analysis: An Overview

In this chapter shall be explains the origin, history and development of scientrometric analysis. Citation analysis, authorship pattern, growth models, impact factors, collaborative index, software for scientometric and brief information on bibliometrics laws.

Chapter 4- Background of Web Technologies

This chapter shall give brief information of web technologies.

Chapter 5- Data analysis and Interpretation

This chapter shall give information based on data collection from web of science and SCOPUS database analysis and interpretation of the data with regards to result will obtain and discuss in this chapter.

Chapter 6- Summary, Findings and Conclusion

This chapter shall give the entire summary and findings and conclusion of the study of research productivity of web technologies in library and information science literature during 2000-2020 with reference to web of science and SCOPUS data bases.

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